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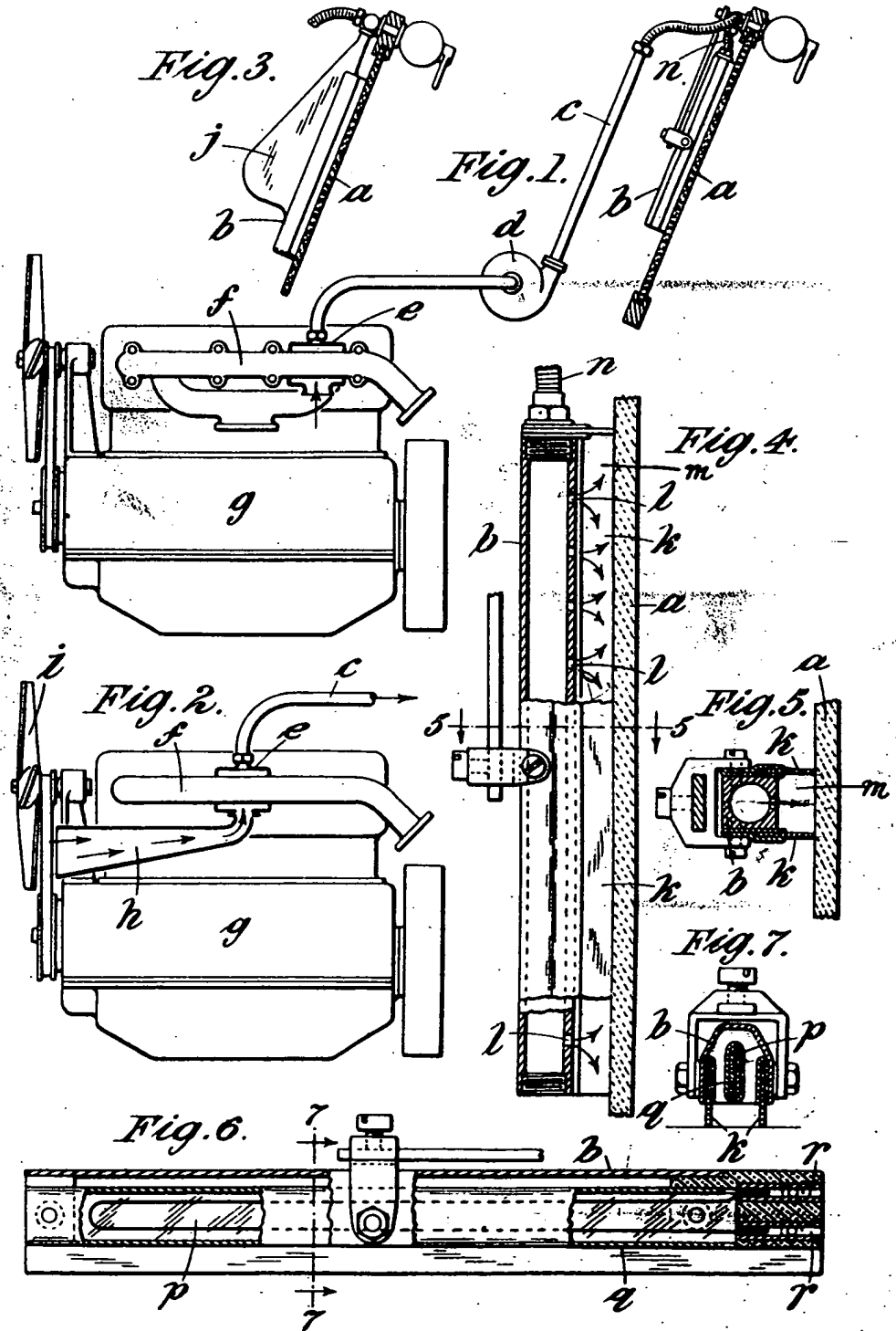
BRITISH  
RELAND ET AL

Nov 1933  
402,189

402,189 COMPLETE SPECIFICATION

1 SHEET

[This Drawing is a reproduction of the Original on a reduced scale.]



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# PATENT SPECIFICATION

COPY

Div. 15  
402,189



Application Date: July 19, 1932. No. 20,458/32

Complete Left: April 12, 1933.

Complete Accepted: Nov. 30, 1933.

## PROVISIONAL SPECIFICATION

### Improvements in and relating to Wind Screen Wipers.

We, ROBERT SUTHERLAND, O.B.E., a British subject, of 3, Lombard Street, London, E.C. 3, and CYRIL RANICAR, a British subject, of 9, North Street, Leatherhead, in the County of Surrey, do hereby declare the nature of this invention to be as follows:—  
This invention relates to wind screen wipers such for example as are used on motor vehicles, aeroplanes, boats, ships, wind screens, drivers observation windows of trains, trams, observation windows of enclosed control cabins of aeroplanes and the like and has for its object, the effective removal of frosted mist, ice, snow or other obstruction to vision incidental to climatic conditions.  
According to the invention a wiper blade is provided on so that portion of the wiper mechanism in which the wiper operates, there is a hot air supply manifold, or the like, from which is so arranged to cause the hot air from the manifold to impinge on the screen surface and thus raise the temperature of the screen itself. This current of hot air may be assisted by an impeller or other similar device operated by suitable motion, or equivalent, to the wiper itself, may be constructed and operated in such a way as to pass from the hot air supply manifold and be directed from the wiper blade to the screen surface, or may be disposed in the hot air supply manifold close to the wiper blade.

Impeller or other similar device operated by suitable motion, or equivalent, to the wiper itself, may be constructed and operated in such a way as to pass from the hot air supply manifold and be directed from the wiper blade to the screen surface, or may be disposed in the hot air supply manifold close to the wiper blade.  
In order to cause the hot air from the manifold to impinge on the screen surface, the manifold may be so arranged that the hot air from the manifold is so directed as to impinge on the screen surface, or may be so arranged that the hot air from the manifold is so directed as to impinge on the screen surface, or may be so arranged that the hot air from the manifold is so directed as to impinge on the screen surface.

## COMPLETE SPECIFICATION

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We, ROBERT SUTHERLAND, O.B.E., a British subject, of 3, Lombard Street, London, E.C. 3, and CYRIL RANICAR, a British subject, of 9, North Street, Leatherhead, in the County of Surrey, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—  
This invention relates to wind screen wipers such for example as are used on motor vehicles, aeroplanes, boats, ships, wind screens, drivers observation windows of trains, trams, observation windows of enclosed control cabins of aeroplanes and the like and has for its object, the effective removal of frosted mist, ice, snow or other obstruction to vision incidental to climatic or other conditions.  
According to the invention a wiper blade is provided on so that portion of the wiper mechanism in which the wiper operates, there is a hot air supply manifold, or the like, from which is so arranged to cause the hot air from the manifold to impinge on the screen surface and thus raise the temperature of the screen itself. This current of hot air may be assisted by an impeller or other similar device operated by suitable motion, or equivalent, to the wiper itself, may be constructed and operated in such a way as to pass from the hot air supply manifold and be directed from the wiper blade to the screen surface, or may be disposed in the hot air supply manifold close to the wiper blade.

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According to the invention a wiper blade is provided on so that portion of the wiper mechanism in which the wiper operates, there is a hot air supply manifold, or the like, from which is so arranged to cause the hot air from the manifold to impinge on the screen surface and thus raise the temperature of the screen itself. This current of hot air may be assisted by an impeller or other similar device operated by suitable motion, or equivalent, to the wiper itself, may be constructed and operated in such a way as to pass from the hot air supply manifold and be directed from the wiper blade to the screen surface, or may be disposed in the hot air supply manifold close to the wiper blade.

so that a passage or passages may exist in the body of the blade through which the hot air can pass to an orifice or orifices or a channel or channels so disposed that in the movement of the blade close to the surface of the screen the air is brought into contact with the surface of the wind screen.

In some cases the air may be heated electrically and an electrically driven impeller be used to put the stream of hot air into motion. The heating of the part of the screen swept by the wiper arm prevents moisture from being condensed on the inside surface of the screen such as occurs from the breath of people traveling in a closed car in cold weather.

In order that the invention may be better understood we will now proceed to describe the same in relation to the accompanying drawing, reference being had to the letters and figures marked thereon. Like letters refer to like parts in the various figures in which

Figure 1 is a side view of the improved wiper apparatus fitted to the wind screen of a motor car, aeroplane or motor boat by way of example the air being heated by means of a muff round the manifold of the exhaust, and having a fan in series in the air pipe line.

Figure 2 is a similar arrangement of heating but the air intake is effected through a funnel pipe the open end of which is disposed behind the air fan or the engine radiator in order to force the air along the air pipe line to the wiper.

Figure 3 is a view of a wiper arm of a fan shape which throws the air centrifugally and causes a suction in the air pipe line.

Figure 4 is a part sectional side view of a wiper arm having a pair of flexible blades adapted to form a channel along which air can be fed from the pipe line to the surface of the wind screen.

Figure 5 is a transverse section of the same.

Figure 6 is a part sectional side view of a wiper arm having an electrically heated element for heating the air between two flexible blades.

Figure 7 is a part sectional view of the same.

Referring to Figure 1, *a* is the wind screen and *b* is the wiper body to which is attached a pipe *c* in which an impeller *d* is disposed in series with a muff *e* arranged round the manifold *f* of the exhaust of the engine *g*, which muff *e* is open to the air at its lower part. In Figure 2 the impeller *d* is left out and the air supply to the muff *e* is taken through a trumpet mouthed pipe *h* disposed behind the fan *i* or it may be disposed up

against the back of the radiator so as to receive the hot air passing through said radiator. In Figure 3 the body *b* is formed with a fan or equivalent shaped chamber so that at each oscillation a considerable volume is thrown out centrifugally from the body *b* which produces a suction of air through and from the heating muff as indicated in Figures 1 and 2.

In Figures 4 and 5 the body *b* is provided with twin blades *k* of indiarubber or other flexible material and is of tubular formation with apertures *l* leading to the space in between the blades *k*. The hot air pipe *c* is attached to the connecting nipple *n* by a flexible pipe such as shown in Figure 1 or other equivalent device.

In Figures 6 and 7 the body *b* is provided with an electrical resistance element *p* insulated by a mica or other suitable material and enclosed in a metal casing *q* and provided with terminals *r* for connection to a source of electric current. The casing *q* is disposed between the twin blades *k* so as to heat the air contained between the blades *k*, which heated air transfers its temperature to the part of the wind screen with which it is in contact.

It will be seen that all the devices described totally heat that part of the wind screen to which they are applied, and not only heat the outside surface clear of frosting effect but at the same time prevent the said part of the screen on the inside from being covered with condensation of the breath of the occupants or of the warm aqueous constituent of the atmosphere however produced.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. An improved wind screen wiper consisting of a movable arm in combination with means for delivering a current of gaseous matter from said arm on to said wind screen and means for heating said gaseous matter before delivery, substantially as described.

2. In a wind screen wiper as claimed in claim 1 the combination of a heating element with means for causing a movement of the gaseous matter to pass into contact with the heating element, substantially as described.

3. In a wind screen wiper as claimed in claim 1 the combination of a muff on a pipe carrying heated matter with an impelling or suction device adapted to cause air to pass through the muff and means for supplying such heated air to the wind screen wiper, substantially as described.



4. In a wind screen wiper as claimed in claim 1 the arrangement of an electrically heated element in the wiper arm and means by which the air heated by the element is continuously brought into contact with the surface of the wind screen, substantially as described.

10 6. In a wind screen wiper as claimed in claim 1 a wiper arm having two or more flexible wiper blades adapted to form a passage or passages along said arm for the movement of the heated gaseous matter, substantially as described.

15 8. A wind screen wiper constructed as illustrated in Figures 4 and 5 of the accompanying drawing.

7. A wind screen wiper constructed as illustrated in Figures 6 and 7 of the accompanying drawing.

Dated this 12th day of April, 1933.

FELL & JAMES,

11, Queen Victoria Street, London.

Agents for the Applicants.

Reference has been directed, in pursuance of Section 7, Sub-section 4, of the Patents and Designs Act, 1907, to 1932 to Specifications Nos. 335,622; 326,042 and 311,167; and in pursuance of Section 7, Sub-section 5, to United States of America Specification No. 1,829,396.

These References are inserted as the result of a Provisional Report under Rule 28 of the Patents Rules, 1933.

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